Example 15

Comparison

In Table 1, the advantages with respect to oxidation stability, flowability and redispersibility of the particles produced in accordance with the invention as compared to particles that are produced in accordance with the state of the art become clear. The better oxidation stability is determined by the lower proportion of surface oil.

TABLE 1

Cyclodextrin-Particles containing d-limonene	According to the invention	per EP-A 392 608	per DE-A 31 05 666	
Embodiment	Example 2	Kneading, spray drying	Kneading, drying grinding, sifting	
Process	Batchwise preparing of the spray mix, continuous, simultaneous drying and granulation	Batchwise preparing of the spray mix, continuous simultaneous drying and no granulation	Continuous extrusion and granulation	Batchwise preparation of the mix, batch drying, batch grinding, batch sifting
Particle size	50 μm-300 μm	0.05 μm-5 μm	500-1000 μm	500-1000 μm
Pourability (angle of pouring)	32°	63°	52°	47°
Redispersibility at 20° C.	4	0	3	3
Surface oil	0.04%	0.40%	2.4%	0.19%
Retention	86%	74%	92%	86%
Oxidation sensitivity (after 180 days)	0	3	5	3

Flowability was determined in accordance with DIN ISO 4324. A pour angle <300 means a very good flowability, a pour angle between 30° and 40° means a free flowability and a pour angle >45° means a poor flowability (see also Uhlemann, Moehrl: Fluidized Bed Spray Granulation, Springer-Publishers Berlin, 2000, page 169).

Oxidation sensitivity was evaluated following storage times of one day or, as the case may be, 180 days (storage temperature 20° C.). Respectively 100 g samples were filled into a 250 ml plastic bottle which was tightly closed with a lid. Following the respective storage times the bottles were opened and evaluated as to smell. The evaluation was based on a scale of 0 (no oxidation smell) to 5 (strong oxidation smell). After one day all particles of Table 1 were still in basically sound condition.

Redispersibility was checked in the following way: in a beaker glass 20 ml water (20° C.) and 200 mg of the respective particles were added and stirred for 1 minute at 200 min^{-1} with a magnetic stirrer. Evaluation was based on a scale of 0 (very poor redispersibility) to 5 (complete redispersibility). Very poor redispersibility was indicated when, following the stirring, not all of the particles were wetted or hydrated with water, had formed large agglomerates and/or if following a stand time of 1 minute, many particles sank to the floor.

Example 16

Chewing Gum with Peppermint Flavor

In a chewing gum (B) 2 wt. % of peppermint flavor-cyclodextrin product of Example 3 (corresponding to 0.18 wt. % flavor) and 1.12 wt. % peppermint flavor in fluid form were worked in. For comparison, a chewing gum (A) was produced, which contained 1.30 wt. % peppermint flavor in liquid form. Sensory time-intensity studies using a skilled test group (12 persons) showed overall a significantly higher flavor intensity with chewing gum (B) with peppermint flavor-particles. These results are summarized in FIG. **1**. As shown in FIG. **1**, after 15 minutes the peppermint flavor-cyclodextrin product (A) containing sample had twice as high a flavor intensity as the control product (B).

The peppermint flavor intensity was evalated on a scale of from 0 (no peppermint flavor) to 10 (very strong peppermint flavor).

Example 17

Wafers

The limonene-cyclodextrin product of Example 2 was added in an amount of 1.2 wt. % (corresponding to 0.1 wt. % flavor) to a wafer batter comprised of flour, water, sugar, lecithin, salt and peanut oil. Wafers were baked at a temperature of 200° C. for 1 minute. For comparison, liquid limonene was added in the same concentration to the batter and mixed into the same ingredients. The sensory evaluation of fresh product (1 day old) demonstrated a higher flavor intensity in the wafers with the limonene-cyclodextrin product. As shown in Table 2, sensory evaluation could be confirmed.